

REMARKS

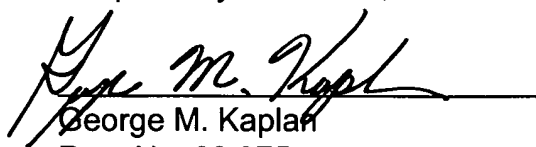
The claims in the application are 1-20.

Favorable consideration of the application as amended is respectfully requested.

The claims have been amended to eliminate all multiple dependencies, with Claims 11-20 added. Additionally, the specification has been amended for formal reasons, with the Abstract formally inserted.

Early favorable action is earnestly solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "George M. Kaplan", is written over a horizontal line.

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sources. A problem with pulsed welding is the requirement for very precise parameter settings. This problem has been partially addressed in recent years by the introduction of double pulsing or pulse-on-pulse capabilities in these power sources. This involves the introduction of a slower pulsing between two different short pulse parameter settings, in addition to the pulsing that has the object of separation of droplets (short pulsing). In this way, a slightly greater tolerance is achieved with regard to the sensitivity of the parameters.

A remaining problem has been welding vertical V-joints in thicker materials, for example, 5-10 mm thick. Great skill has been required in order to weld such joints with acceptable quality. This has applied in particular when welding in aluminum or stainless steel. In order to bridge gaps when welding the root run as well as in order to obtain sufficient penetration and to avoid the weld pool running downwards during welding of sealing runs, the welder has been forced to use a weaving motion and, in this way, control the heat input at any time. This is both tiring and time-consuming and, even with this, the back of the weld joint has usually been concave, which results in poorer strength than if the back had been a convex shape. In order to achieve the required convex shape, some form of backing bars has often had to be used.

Summary Object of the invention

The object of the present invention is therefore to provide a method and an arrangement for pulsed welding that completely or partially avoids the problems associated with the known technology. The invention solves the problems in the way described herein ~~in the characterizing parts of the independent patent claims.~~

Advantageous embodiments are also described herein ~~in the~~

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Advantageous embodiments are also described herein.

~~subordinate claims.~~

Brief description of drawings

The invention will now be described in greater detail by means of embodiments and with reference to the attached drawings, in which:

Figure 1 shows schematically an arrangement for MIG/MAG welding;

Figure 2 shows how the current and the voltage are changed when a droplet is transferred between the welding electrode and the workpiece in short arc welding;

Figure 3 shows a cross section of the lower part of the welding nozzle and a workpiece when welding in the spray mode;

Figure 4 shows an outline diagram for pulsed welding;

Figures 5-8 show examples of how the setting procedure for the invention can be designed.

~~Modes for carrying out~~ Description of the preferred embodiments ~~invention~~

Figure 1 shows an arrangement for MIG/MAG welding. This arrangement comprises a pulsed welding power source 1 and a wire feed unit 2. The arrangement comprises, in addition, a welding gun and a gas cylinder 4 connected to this. The welding gun comprises a front nozzle comprising an outer tube 5 through which the gas is taken and an inner tube arranged centrally in this tube, which inner tube comprises a contact nozzle 6 through which the electrode 7 is passed. The electrode 7 and the workpiece 8 are connected to the welding power source 1 in the conventional way so that a voltage difference is created between them. The arrangement is controlled in such a way that the material transfer from the electrode to the workpiece is carried out essentially by droplets without the occurrence of a short circuit (Figure 4). This is carried out by the welding current being periodically increased to a pulse current of such a size and length

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